Performance-to-Goal

in Executive Compensation Contracts

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Abstract

Theory and field studies have suggested that performance goals in executive compensation contracts play a pivotal role in inducing CEO's effort toward organizational goals. I show empirical evidence consistent with the prior literature by investigating relationship between performance goal achievement and executive compensation. First, CEOs' major economic incentives are placed on achieving their own performance goals rather than analyst earnings forecast, past earnings level, and zero-earnings target. Performance goal achievement has greater impact on the size of annual non-equity incentive compensation than other key determinants of CEO pay have, which include firm size, firm-wide performance as opposed to CEO's individual performance, firm industry, CEO characteristics, and corporate governance score. Second, I find that typical relationship between performance goal achievement and CEO

pay is designed nonlinearly ex ante, largely inconsistent with prior theoretical support of linear association. Ex post, evidence indicates that CEOs actively respond to incremental change in economic incentive around the exact point of meeting performance goal and around each threshold along the performance goal achievement horizon. Finally, I report the improvement of association between executive pay and shareholder wealth ("pay-performance sensitivity") when CEOs meet performance goals and when performance goal achievement level is higher and is within the incentive zone. In conclusion, this study reveals the concurrent practice of performance evaluation and compensation of CEOs of the largest U.S. companies. Performance goals are important control mechanism widely adopted by the corporate boards, and this study posits that the mechanism contributes to increase in shareholder wealth.

Keywords: performance goal; executive compensation; pay-performance sensitivity.

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Table of Contents

List of Figures and Tables

1. Introduction

Performance goals serve as key criteria to assess performance and determine compensation of corporate chief executive officers (CEOs). Prior literature has suggested the important role of performance goals in executive compensation contracts in inducing CEO effort toward the organizational goals. Murphy (2001) shows that annual CEO bonus is based on performance measured relative to pre-established performance standard rather than performance itself. Ittner and Larcker (2001) suggest that performance targets are pivotal in evaluating managerial performance as well as managers' selecting action plans. They argue that the important role of performance target has been rarely investigated in empirical accounting research largely due to scant data. Researchers have examined the roles and implications of performance goals in the context of broader compensation literature. Indjejikian and Nanda (2002) use executive target bonuses and actual bonuses data to find implications about performance standards setting practice. Recently, Anderson, Dekker, and Sedatole (2010) study the adoption of a large retailer's performance goal-based bonus plan and suggest that the plan better aligns managers' pay with their performance.

Security and Exchange Commission (SEC) requires listed companies to disclose detailed information of executive compensation in the Compensation Disclosure and Analysis (CD&A) section of proxy statements, effective since 2006.[1]

[1] SEC states that not every performance goal is required to be disclosed, considering possible competitive disadvantages from revealing proprietary information (SEC Final Rules 33-8732a, 2006). This principles-based, often discretionary disclosure standard potentially leads to selection bias toward a firm's decision to publicly report performance goal setting process. Kim and Yang

The proxy statements reveal the wide use of performance goals as criteria for top management performance evaluation and compensation decision, consistent with prior academic literature. As an example, Wal Mart Stores Inc.'s 2013 proxy statement clarifies that their annual CEO cash bonuses are "contingent on the degree to which the company achieves pre-established performance goals that the CNGC [Compensation, Nominating and Governance Committee of the board of directors] determines are aligned with the company's short- and long-term operating and financial objectives." The use of performance goals lead to, they argue, management compensation being "heavily weighted towards performance" and "aligned with our [their] key financial priorities – growth, leverage, and returns." As such, I focus on the important role of performance goals in affecting management incentive and aligning manager's and shareholders' interests. Finding of the desired roles played by performance goals will be consistent with optimal contracting theory that utilized employment compensation contracts to mitigate agency costs that incur from the separation of ownership and management (Fama and Jensen, 1983).

In this article, I develop the idea that performance goal acts as pivotal organizational control mechanism for shareholders (through boards of directors, or more directly, compensation committee) to incentivize CEOs to maximize firm value. I begin by showing that performance goal achievement level (p-to-g; defined as ratio of actual performance level to performance goal level) is a key determinant of annual CEO bonus

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(2012), who explore earnings per share target setting using the similar corporate proxy disclosure as this study, test for selection bias. They tabulate that Heckman's selection model does not find evidence of selection bias.

compensation, after controlling for standard economic factors, corporate governance, and other related components of CEO pay.[2] The impact of performance goal achievement on the magnitude of annual CEO bonus is not only statistically and economically significant but also stronger than any effects of other factors that have been traditionally considered important. Overall, the importance of considering the factors has been postulated by three large streams of research. Specifically, optimal contracting theories suggest that firm performance is the main driver of management compensation. This view is in accordance with standard principal-agent theory, as the tight link between performance and pay in turn mitigates agency costs that incur from separation of corporate ownership and management. On the other hand, rent extraction theories argue that corporate governance has great influence over the size of executive compensation. The quality of corporate governance is measured by various factors that are related to board composition and ownership structure. Existing evidence is generally mixed, and researchers have so far concluded that corporate governance has an important effect on management compensation (Larcker, Richardson, and Tuna, 2007; Larcker and Tayan, 2011). Lastly, studies in accounting and financial economics have found that firm size, CEO age and tenure, beating analyst earnings forecast consensus, meeting zero-earnings threshold, and beating prior earnings level all have determining

[2] Performance goal achievement is measured in largely two ways: ratio of actual performance to performance goal as in this study or actual performance minus performance goal as in Anderson, Dekker, and Sedatole (2010) and Holzhacker, Mahlendorf, and Matejka (2013). The ratio method is more appropriate in this article's setting where performance metrics are different by firm and year. That is, the second difference method requires unnecessary additional process to scale, say, ROA goal achievement of 1% with operating income goal achievement of $1 million. This difference method is more appropriate for such settings as proprietary one-firm study with identical performance measure across measurement unit.

impacts on CEO pay. I find that CEOs have greater economic incentives to achieve their own performance goals than to pursue other benchmarks, in order to receive annual bonus compensation beyond the target level. As a robustness check, I compare impacts of performance goal achievement, beating analyst forecast consensus, and beating prior earnings level in separate univariate tests, and find the same results as in the previous multivariate panel data tests. Furthermore, I conduct common factor analysis to address multicollinearity concern from including numerous potentially correlated dependent variables in a regression model. The results also show the strongest impact on annual non-equity compensation from performance goal achievement factors, consistent with the main findings.

I then focus on the nonlinearity of typical executive compensation contract. First, I show that the fact that a CEO has achieved the performance goals leads to a disproportionate increase in bonus relative to slightly missing the performance goals. This finding indicates that CEOs have particular interest in meeting the performance goal, as originally intended by compensation contracts. Second, Healy (1985), Holthausen, Larcker, and Sloan (1995), and Dechow (2006) suggest that CEO bonus contracts often have three thresholds, namely the lower bound, performance target, and upper bound. They posit that CEOs receive no bonus when performance is below lower bound, performance-matched bonus between the lower bound and upper bound surrounding the performance target ("incentive zone"), and capped bonus when performance is above and beyond the upper bound. Using the relatively large actual executive compensation contracts of the largest U.S. companies, I find a few differences.

Many CEOs are paid some bonuses even when they fail to meet the lower bound. Likewise, many CEOs are paid bonuses higher than the maximum target bonuses for beating the upper bound. In sum, typical compensation contracts are in fact more consistent with the pay-for-performance argument than many have expected. CEOs are rewarded for their achievement of performance goals even when the achievement level is too low (below the lower bound) or too high (above the upper bound).

Having found that CEOs are compensated by their performance goal achievement and that performance goals play such a pivotal role in executive compensation contracts, I next examine the idea that use of performance goals in executive compensation contract and achieving performance goals enhance the association between CEO pay and shareholder wealth, as prior literature and corporate proxy statements in practice suggest. I test this hypothesis with standard pay-performance sensitivity model in the intersection with performance goal achievement. In particular, following traditional approach (e.g., Faleye, 2007; Yermack, 1996), I use Jensen and Murphy's (1990) pay-performance sensitivity models and add to the model interaction term between variety of variables with regard to performance goal achievement and change in shareholder wealth. I report the improvement of pay-performance sensitivity when CEOs meet performance goals and when performance goal achievement level is higher and within the incentive zone. This suggests that performance goals induce CEO effort toward organizational goals, which results in shareholder wealth enhancement.

In conclusion, CEOs' annual incentive bonuses are determined by the level of

performance goal achievement, in line with what most large U.S. companies claim in their proxy disclosure. This practice leads to placing CEOs' economic interest on achieving their performance goals that were pre-established by board of directors who presumably represents shareholders' best interest. In other words, performance goals play an important role in aligning management's interest with shareholders' interest and, consequently, in mitigating agency costs that arise from the separation of corporate ownership and management. The findings extend traditional frameworks of optimal contracting theory by incorporating the relatively underdeveloped but important role of executive performance goal setting in overall compensation contract.

Remainder of the article is organized as follows. I first review prior literature that relates with my study in Section 2. Then, I develop hypotheses based on the related literature in Section 3. In Section 4, I provide sample collection process and descriptive statistics of the unique dataset. In Section 5, I develop empirical models and analyze findings from the models. Section 6 concludes the manuscript with suggestion of further investigation into the research questions.

2. Related Literature

(1) Alignment of manager and shareholder interests

Shareholders of corporations delegate their decision management and decision control to board of directors, and in turn, board of directors delegates most of decision management to top management and reserves decision control rights that include hiring, rewarding, and firing of chief executive officer (Fama and Jensen, 1983). Many prior

studies have addressed agency costs arising from the separation of ownership and control in corporations and suggested that managerial incentive compensation can be used as a key instrument to effectively align managers' economic interest with that of shareholders. In particular, rewarding managers for their effort of increasing shareowners' wealth, or namely the pay-for-performance compensation design, effectively mitigates agency costs in principal-agent models by, for example, granting responsibility to managers or curbing managerial behaviors that are costly to the firm (Milgrom and Roberts, 1992; Brickley, Smith, and Zimmerman, 2008). Likewise, granting long-term incentive contracts to align manager's interest with that of shareholders ex ante is a common solution to incomplete compensation contracts for managers with agency problems (Shleifer and Vishny, 1997). In this article, I examine the role of executive performance evaluation in CEO annual bonus compensation and show that performance evaluation process plays a significant role in effectively aligning managers' interest with that of shareholders.

(2) Pay-for-performance

Two large bodies of compensation research postulate different views regarding pay-for-performance (Edmans and Gabaix, 2009). Traditional body of economic research shows that managers generally are rewarded for exerting effort that leads to increase in shareholder wealth. To begin with, Jensen and Murphy (1990) estimate that CEO wealth changes $3.25 per $1,000 change in shareholder wealth. They interpret the low estimate as the evidence of inefficient incentive contracts and the result of ongoing political pressure on high level of executive pay. Hall and Liebman (1998), using a more recent

dataset, find stronger pay-performance sensitivity and suggest that increase in executive stock options grant almost entirely drives the tighter relationship between firm performance and executive compensation. By suggesting the new evidence, they contradict the claim that the little link between performance and pay, such as one in Jensen and Murphy (1990), is interpreted as the inefficiency of extant CEO compensation contracts. In a similar vein, Haubrich (1994) shows that the low pay-performance sensitivity is not necessarily inconsistent with the optimal contracting theory in case CEO is risk-averse.

In part to provide explanation to such weak pay-performance sensitivity and the contemporary excessive CEO pay, critics of optimal contracting view have argued that due to malfunctioning corporate governance system CEOs have much power over their board of directors and the managerial power significantly influences the process of setting executive compensation contracts. Bebchuk and Fried (2004) and Bebchuk, Fried, and Walker (2002) contend that many corporate governance systems do not operate properly. They collectively argue that powerful CEOs set their own compensation in excess of what standard optimal contracting theory may suggest. In addition, Bertrand and Mullainathan (2001) report that CEO pay is often granted by luck and this "paid for luck" practice is more severe in the firms with poorer corporate governance. Core, Holthausen, and Larcker (1999) find an inverse relationship between corporate governance and the level of management compensation. They show significant role of corporate governance in explaining the cross-sectional variation of CEO compensation after controlling for the standard economic factors that have traditionally been found to

affect the level of CEO compensation. In sum, evidence of management rent extraction theory argues that many corporate boards fail in effective alignment of manager and shareholder interests, and as a consequence, executives extract undue rents from the firm often in the form of compensation package.

Collectively, extant literature develops on the premise that executives are rewarded for their effort and the consequent performance. However, researchers also tend to agree that part of CEO compensation is unlikely to be explained by the economic contribution to the firm value. Many argue that the majority of the missing part is explained by managerial power and rent extraction incentives, often due to poor corporate governance. Some, on the other hand, argue that CEO's personal, often unobservable talent as opposed to hard work as well as institutional factors, e.g., change in financial reporting standard which starts to treat executive stock options as costs, all take part in determining executive compensation (Gabaix and Landier, 2008; Carter, Lynch, and Tuna, 2007). In this article, I focus on an underdeveloped determinant of CEO annual bonus compensation, namely the performance target achievement, and show that this measure of executive performance has the most direct association with CEO incentive compensation.

(3) Performance goal in managerial compensation contract

While researchers have collectively suggested that economic factors, corporate governance, and other personal or institutional factors determine executive compensation, one of the most underdeveloped yet important components of compensation contract that affects selection of manager actions and evaluation of

performance is CEO individual performance goal (Ittner and Larcker, 2001; Murphy, 2001). And the level of achievement of performance goals, namely the performance-to-goal measure ("p-to-g") has been excluded from the discussion of pay and performance relationship, largely due to unavailable empirical data. However, there are notable exceptions. Murphy (2001) investigates the largely ignored but important determinant of annual bonuses, namely the performance standards. He argues that bonuses are not based on performance measures per se but on "performance measured relative to a performance standard (Murphy, 2001, p. 246)." He finds that firms employing internal budget-based performance standards have different bonus payouts and earnings smoothing than the firms using externally-determined standards such as peer groups and cost of capital. Merchant and Manzoni (1989) reveal from interviews with corporate managers that, unlike textbook prescriptions of less-than-50-percent chance of budget targets, budgets in practice are met most times and more surprisingly, this high performance target achievability is intended by both supervisors and managers. They argue that the target-setting process is "a bargaining process between parties whose incentives are, in the vast majority of cases, well aligned (Merchant and Manzoni, 1989, p. 547)."

More recently, Anderson, Dekker, and Sedatole (2010), using proprietary field data of a U.S. retailer's sales and sales goals, argue that managers meet but not beat their sales targets and prior actual performance affects next goal levels. Their study is conducted under the premise that "bonus plans typically pay for performance relative to a goal (Anderson, Dekker, and Sedatole, 2010, p. 90)," which reassures the importance

of investigating managerial compensation contract in the context of performance and performance target. Indjejikian, Matejka, Merchant, and Van der Stede (2014) find that firms base their managers' bonuses on the achievement of performance targets that are set to incorporate the managers' past actual performance but only to a limited extent, in consistent with theoretical benefits of having such incentive contracts.

In conclusion, although researchers have found numerous evidence of what affects executive incentive compensation, only a few recent works explore the role of performance target setting process in managerial compensation contracts. These few studies exploit private samples that often consist of departments within a single firm or are based on survey results. Therefore, it is meaningful to examine a wider cross-sectional time-series dataset of public firms, even merely to find whether existing results are replicated (Indjejikian, Matejka, and Schloetzer, 2014). Furthermore, I combine the two streams of research, one in performance target setting and the other in executive pay-performance sensitivity, to develop novel hypotheses in this article.

3. Hypotheses Development

From the pay-for-performance perspective, executives are paid according to their performance that is often measured as financial performance metrics. This logic is precisely what prior literature in executive compensation follows. As a consequence, the large body of financial economic studies (the optimal contracting view) suggests that firm's stock performance and operating performance determine the level of CEO pay (e.g., Core, Holthausen, and Larcker, 1999; Murphy, 1999). They generally find that

executive compensation is tied to firm performance. By contrast, literature in corporate governance and law (the managerial power view) argues that CEOs exert their power over the board of directors to set their own pay (e.g., Bebchuk, Fried, and Walker, 2002). Thus, proxies for agency costs and measures of corporate governance are factored into the function of executive compensation.

Accounting literature has shown that CEO's own economic incentives play a role in setting the amount of his bonuses. Meeting or beating analyst consensus earnings forecast is positively associated with executive pay level (Matsunaga and Park, 2001; Burgstahler and Eames, 2006). Executives receive larger compensation when they beat zero earnings (Burgstahler and Dichev, 1997). In addition, sustaining or improving from the last fiscal year's earnings is another factor that affects the level of CEO pay (Degeorge, Patel, and Zeckhauser, 1999). These factors share a common theme that they are related to CEO's individual incentives to earn bonuses. These studies are meaningful to examine the more direct impact of incentive compensation contracts on executive behaviors. However, they also share another common feature that all the factors are assumed to be a CEO's priority concern regardless of the status of the firm performance. For example, CEOs of profitable companies may not consider meeting zero earnings or prior earnings to be their achievement to secure the annual bonuses.

In this manuscript, I hypothesize that CEO's own performance target achievement is associated with annual bonus level. I predict that the association is positive and strong. I further examine the idea that the positive association between CEO's own performance target achievement and the annual bonus level is stronger than

the relationships between other factors and the executive pay level, based on the hypothesis that CEO has the most direct and strongest incentives to meet his individual performance targets rather than any other performance criteria that are either corporate-wide or externally-determined.

H1: CEO's performance goal achievement is positively associated with the annual non-equity incentive compensation.

Prior research suggests that ex ante, typical compensation contract involves nonlinearity in the compensation and performance goal relationship. That is, under the typical bonus contract, no bonus is paid until CEOs meet the lower bound, minimum bonus is paid when they meet the lower bound, target bonus is paid when they exactly achieve the performance goal, and limited maximum bonus is paid when they beat the upper bound of the contract. Murphy (2001), Dechow (2006), Healy (1985), and Holthausen, Larcker, and Sloan (1985) show such evidence using proprietary small sample data. I first examine whether the large sample actual compensation contracts support the prior findings. I then investigate whether the contract works as designed by the board ex post. In doing so, I develop the hypothesis that managers have different incentives along the nonlinear compensation contract.

H2: CEO's performance goal achievement is nonlinearly associated with the annual non-equity incentive compensation.

Existing research in pay-performance sensitivity suggests largely mixed evidence of

efficiency of executive compensation. Jensen and Murphy (1990) show that pay-performance sensitivity is low. However, Hall and Liebman (1998) argue that increasing use of executive stock and stock option grant contributes to the growth of pay-performance sensitivity in the more recent period. Despite the discrepancy, and more important, the difficulty of interpreting the estimates, the pay-performance sensitivity analysis is advantageous to directly examine the CEO's sharing rate of shareholder value creation (Murphy, 1999). Accordingly, many researchers have tested the pay-performance sensitivity models in varying forms (e.g., Himmelberg and Hubbard, 2000; Perry and Zenner, 2001; Faleye, 2007; Yermack, 1996).

In a similar vein, I hypothesize that when CEO's performance goal achievement is taken into account to the pay-performance sensitivity analysis, the relationship between the executive pay and shareholder wealth will become stronger. To capture the effect of performance target achievement on pay-performance sensitivity, I include an interaction term between change in shareholder wealth and CEO performance target achievement measures in the model. The coefficient of the interaction term will be the indicator of asymmetric pay-performance sensitivity in case of meeting or failing to meet CEO's performance target. Specifically, I predict the coefficient is positive, which indicates that CEO pay is more related to the CEO's contribution to shareholder wealth growth when he achieves performance target. The findings will shed light on the literature in asymmetric pay-performance sensitivity. Leone, Wu, and Zimmerman (2006) report that sensitivity of CEO cash compensation and stock return is twice greater when the stock return is negative than positive. Dechow (2006) discusses the paper and argues

that different elements of compensation package, i.e., cash bonus versus equity compensation, will result in different asymmetries in pay-performance sensitivity. Shaw and Zhang (2010), however, find no significant evidence of such penalty to poorly-performing CEOs, based on refinement of the classification of firm stock returns. They partition the firm stock return and accounting earnings into three segments, high, low, and average, respectively, and show that there is no asymmetrically stronger pay-performance sensitivity for low-performing CEOs. These studies provide a number of further research opportunities, and among them is to use even more refined measure of CEO performance that truly captures whether the CEO's performance achieved the target that was granted by board of directors who assumes the major responsibility of monitoring the managers.

H3: CEO's performance goal achievement increases the sensitivity of change in executive compensation and change in shareholder wealth.

4. Sample Collection and Data Description

Effective since December 15, 2006, Security and Exchange Commission (SEC) has required companies to disclose detailed information of executive and director compensation in the Compensation Disclosure and Analysis (CD&A) section of proxy statements. The new disclosure rules intend to provide investors with clearer and more complete picture of top executive compensation contracts in an effort to prevent executives from setting their own pay excessively high and to encourage BOD to monitor management compensation more actively (Faulkender and Yang, 2013). SEC

also recommends firms that they disclose the executives' performance goals and actual performance for each performance metric.

I hand-collect S&P 500 CEOs' actual compensation contracts from each firm's annual proxy statements over five consecutive years from 2008 to 2012.[3] Then, the collected data are matched with corporate accounting and financial data obtained from Compustat, stock price data from the Center for Research in Security Prices (CRSP), executive compensation data from Compustat Execucomp, and analyst forecast earnings data from I/B/E/S.

Potential concerns may arise with regard to my dataset. First, I collaborate on coding the data with a researcher who shares similar understanding and knowledge in management compensation and performance evaluation literature. We establish and follow coding schemes and, after completing the coding process, we cross-check the soundness of collected data. By doing so, I ensure both stability ("intra-rater reliability") and reproducibility ("inter-rater reliability") of the data (Weber, R.P., 1990, "Basic Content Analysis," second edition, Sage Publications; Stemler, S., 2001, "An Analysis of Content Analysis," Practical Assessment, Research & Evaluation). Second, because I focus on quantitative data only, i.e., performance goals and actual performance are presented numerically, there are few occasions where it is necessary to subjectively interpret contents. Finally, to check overall validity of my dataset and to address another potential concern of relatively small sample, I replicate the CEO pay-performance

[3] S&P 500 market capitalization represents approximately 76% of the total U.S. stock market capitalization of all listed firms (S&P 500 market capitalization = US$ 14,199 billion, as of April, 2013, and the U.S. stock market capitalization = US$ 18,668 billion, source: Standard & Poor's and World Bank statistics).

sensitivity model that has been widely-used in prior literature (e.g., Jensen and Murphy, 1990; Hartzell and Starks, 2003). I find similar evidence as in the prior studies both quantitatively and qualitatively, implying that my dataset is not too varied from similar studies.

I exclude sample without p-to-g information, compensation information, and firm financial and stock price information. I also exclude financial firms because my sample period from 2008 to 2012 coincides with the period when the Troubled Asset Relief Program (TARP) was effective. Financial firms under TARP were subject to tight executive pay regulation among others (Larcker, Ormazabal, and Taylor, 2011). Originally, the sample size starts from 2,500 firm-years (500 firms per year over five fiscal years). However, after the data cleaning, the size shrinks by about half to 1,295. The final sample firm-years have information about at least one performance metric, which enables examination of various effects of p-to-g on executive compensation and pay-performance sensitivity. In addition, the sample size varies by models and tests, depending on numbers of available data for G-Index, CEO ownership, and analyst forecast EPS consensus information. Relative to other studies that investigate performance target setting arena, however, my paper is benefited by having larger panel dataset of the largest U.S. companies over the most recent years.

Table 1 shows descriptive statistics of performance goals of the sample firm-years. Panel A shows the sample firms' use of performance measures in their CEO compensation contracts. Specifically, the median number of performance metrics used is 2, with 50% of weight on the first metric and 33% on the second metric. This indicates

the boards' focus on the first performance metric. Panel B documents what performance metrics the firms most use in evaluating their CEOs' performance. 40% of the first performance measures are largely related to earnings per share (EPS), indicating its informative importance to corporate executives and shareholders. The second most widely-used performance measures are operating income and operating income growth rate. The third most used is net income measures, followed by revenue measures and earnings before interests, taxes, depreciation, and amortization (EBITDA). This is largely because the focal compensation is short-term annual CEO bonuses. The order of importance is similar to the second performance metric. However, interestingly, 51% of the second performance measures are composed of other measures that include stock returns, nonfinancial goals, relative performance evaluation, cost standards, and firm-specific and executive-specific goals. It implies that boards use the second performance metric to complement the first performance measure, mostly financial outcome-related, by capturing more qualitative, subjective, and longer-term implications of management decision-making and actions. This lends support to the separate body of research in relative performance evaluation and nonfinancial performance evaluation (e.g., Ittner, Larcker, and Rajan, 1997; Gong, Li, and Shin, 2010; Albuquerque, 2009). Furthermore, boards incorporate such long-term perspectives in setting short-term annual bonus compensation, consistent with what is suggested by critics of manager's myopic behaviors to maximize short-term profits at the expense of sustainable profits. Lastly, Panel C finds that median executives achieve 102% of their performance goal, slightly beating their target performance in the case of the first performance metric. 75% of

CEOs in the total sample achieve more than 96% of their goal, and the top 25% performers attain more than 111% of their goal. The findings confirm the major theme that has been explored by researchers in target setting. That is, while theory suggests that performance goals should be met less than 50% of times to properly motivate managers, in practice, much more than 50% of times performance targets are achieved. Not only do managers prefer to have such easy targets, but also are superiors opt to give highly-achievable targets in order to set realizable goals, prevent managers from boosting earnings, and avoid confrontation (Merchant and Manzoni, 1989). My study supports the prior literature. The distributions of performance goal achievement are similar across first, second, and third performance metric, hence I focus on the first metric that has the biggest firm-year size and the least concern for selection.

[INSERT TABLE 1 ABOUT HERE]

Table 2 illustrates the statistics of my sample data. Panel A shows that the main variable of interest in this article, namely the non-equity incentive compensation, represents approximately 20% of total executive compensation that consists of salary, non-equity incentive bonus, restricted stock grants, long-term incentive payouts, Black-Scholes grant value of stock options, and all other compensation (Himmelberg and Hubbard, 2000; Hall and Liebman, 1998).[4] Cash compensation is the sum of salary and non-equity incentives, and constitutes more than 30% of total executive compensation.

[4] I find that Execucomp data often misallocate annual incentive bonus into bonus item where, after the 2006 SEC disclosure rules, only discretionary bonus should be reported. Instead, the rules classify annual incentive bonus as non-equity incentive payout. Firms sometimes report annual incentive bonus under the wrong bonus items, and Execucomp does not always correct the misclassification. Thus, I use annual incentive bonus data from the actual proxy statements as a variable of interest.

Panel B and C describe sample firm and CEO characteristics, firm ownership, and corporate governance, respectively. In sum, the average sample firm manages $26 billion-worth total assets and earns $20 billion sales revenues a year, reflecting that the sample consists of the 500 largest U.S. companies. The average firm's ROA is 11% and market-adjusted annual stock return is 5%. On the other hand, the average sample CEO is 56 years old, has been at the current position in the current firm for more than five years, and mostly owns less than 1% of outstanding shares of the company. The fact that median CEO stock ownership is much less than mean ownership indicates that a few outlying controlling shareholders, e.g., founders and founding family members, are included in the sample as CEOs. Broadly, findings in Panel B and C are in line with most prior studies. Finally, Panel D presents descriptive comparison between meeting different thresholds for annual bonus compensation. Meeting performance goals, meeting analyst forecast earnings consensus, and meeting prior earnings all similarly occur in around 63% of the total sample. Largely because my sample consists of S&P 500 firms that are likely to avoid loss in income before extraordinary items, more than 90% of the sample firms earn positive income during the sample period.

The three seemingly similarly distributed determinants of CEO pay raises concern for multicollinearity when all three are included in a single model. To address the concern, I conduct common factor analysis as a robustness check (explained in more detail in the next section). The result is qualitatively similar to the main findings, implying that the multicollinearity issue is not a major driving factor behind the initial test.

[INSERT TABLE 2 ABOUT HERE]

5. Model Development and Empirical Analysis

I begin by testing univariate relationship between executive compensation and each of its determinants. I define executive compensation as log of non-equity incentive compensation and log of total compensation. Explanatory variables represent six dimensions surrounding the level CEO pay. First group consists of the main variables of interest. Performance goal achievement is theoretically and practically the key determining factor of non-equity compensation. I expect positive association between performance goal achievement and compensation. Second, the main control group consists of meeting other goals such as analyst earnings consensus, zero earnings, and prior earnings. As suggested in prior research, I predict that each increases with compensation. Third group is composed of standard economic factors that determine the level of CEO pay. Specifically, firm size is proxied by total assets and sale revenues, firm profitability is measured by return on assets and market-adjusted stock return, and firm investment and growth perspective is measured by book-to-market ratio. For all but the last inverse measure of investment and growth, book-to-market ratio, I predict that each is positive related with compensation. Fourth, prior studies suggest two opposite relationships between CEO's ownership and the size of compensation. On the one hand, as a CEO with large ownership has more managerial power he may exert undue influence over his own compensation decision process and pay himself excessively. On the other hand, a CEO with large ownership is more well aligned with shareholders and

has less agency costs, hence receives smaller pay packages under the assumption that excessive compensation is a signal for management entrenchment. CEO age and tenure will likely increase with compensation. The fifth group is about the industry in which the firm operates. In particular, I control for regulated and utility firms for their executive incentive design is less weighed against performance-related variable pays. The last sixth group is the measure of corporate governance. There are two widely used governance indexes in the literature. One is the so-called G-Index by Gompers, Ishii, and Metrick (2003), which counts the incidence of 24 takeover defenses and anti-shareholder rights provisions. The other is the so-called E-Index by Bebchuk, Cohen, and Ferrell (2009), which originates from G-Index and rather focuses on the key six components that are found to be the most effective proxy for the corporate governance quality. I include both indexes in the sixth group to control for general corporate governance. Table 4 reports the results of the univariate test. Most variables indeed have their expected signs of coefficients. Some variables lose statistical significance in the correlation with total compensation. This is of no surprise, given the descriptive evidence that non-equity compensation is approximately only 20% of total compensation. Inconsistent with prediction, CEO tenure is negatively related with compensation, albeit statistically insignificantly. Overall, with a few exceptions, the univariate test results are in line with prior findings.

[INSERT TABLE 3 ABOUT HERE]

As discussed above, different views of executive compensation generate different sets of determining factors of CEO pay. The financial economic perspective collectively finds

that firm size, investment opportunity or growth, and change in shareholder wealth influence CEO compensation (Core, Holthausen, and Larcker, 1999; Cadman, Carter, and Hillegeist, 2010; Gabaix and Landier, 2008). On the other hand, ownership structure and board composition are regarded as determinant of CEO pay by researchers in corporate governance study (Allen, 1981; Core, Holthausen, and Larcker, 1999; Yermack, 1996; Fernandes, Ferreira, Matos, and Murphy, 2013; Hwang and Kim, 2009; Bebchuk, Fried, and Walker, 2002). Others argue that CEO characteristics such as the CEOs' age and tenure and the firm's industry affect the magnitude of executive pay (Milbourn, 2003; Coughlan and Schmidt, 1985; Bushman, Indjejikian, and Smith, 1996).

My first model tests the impact of performance goal achievement on executive incentive compensation after controlling for relevant factors:

$$\begin{aligned} COMP_{it} = {} & \beta_0 + \beta_1 \text{P-to-G}_{it} + \beta_2 \text{D\_Meet\_Analyst}_{it} + \beta_3 \text{D\_Meet\_Zero}_{it} + \beta_4 \text{D\_Meet\_Prior}_{it} \\ & + \beta_5 \log(\text{Assets})_{it} + \beta_6 \log(\text{Sales})_{it} + \beta_7 BM_{it} + \beta_8 ROA_{it} + \beta_9 \text{Adj\_Ret}_{it} + \beta_{10} \text{Ownership}_{it} \\ & + \beta_{11} Age_{it} + \beta_{12} Tenure_{it} + \beta_{13} \text{D\_Regulated}_{it} + \beta_{14} \text{G\_Index}_{it} + \Sigma Year + \varepsilon_{it} \end{aligned} \quad (1)$$

The dependent variable is either natural logarithm of non-equity incentive compensation (Core and Guay, 1999; Hall and Liebman, 1998) or ratio of non-equity incentive compensation to target bonus. I scale the level of non-equity incentive compensation by target bonus, mainly because target bonus is the amount of annual bonus CEO receives for achieving exactly the performance goal, and thus is most directly related to performance goal achievement. I use other denominators, including salary, cash compensation, and total compensation, and find qualitatively similar results (untabulated). In addition to P-to-G and the indicator variable for meeting performance

goal, I include an interaction term between the two variables, to examine how P-to-G contributes to CEO compensation when the CEO meets the performance goal.

Following prior literature (e.g. Smith and Watts, 1992; Baber, Janakiraman, and Kang, 1996; Core, Holthausen, and Larcker, 1999; Fernandes, Ferreira, Matos, and Murphy, 2013; Hwang and Kim, 2009; Cadman, Carter, and Hillegeist, 2010), I control for natural logarithm of total assets (proxy for firm size), book-to-market ratio (reverse proxy for investment opportunity), and market-adjusted annual firm stock return (proxy for change in shareholder wealth). Gabaix and Landier (2008) argue that market capitalization is the most relevant firm size proxy with significantly positive relation with total compensation level. However, I do not include market capitalization in my model due to failure to find such similar effect. Inclusion of natural logarithm of total sales (another proxy for firm size) and return on assets (proxy for corporate profitability) does not change the result. Ownership structure of a firm is measured by percentage of CEO total shares owned excluding options (Allen, 1981; Core, Holthausen, and Larcker, 1999). CEO characteristics that are known to affect the magnitude of compensation are executive's age and the length of tenure as CEO at the firm (Milbourn, 2003; Coughlan and Schmidt, 1985). Regulated industries have distinguished features from non-regulated firms that the executive incentive design has lower components of performance-related variable pay (Bushman, Indjejikian, and Smith, 1996). G-Index proxies for the level of shareholder rights and tends to decrease with firm performance (Gompers, Ishii, and Metrick, 2003). Alternative use of E-Index as proxy for corporate governance does not change the reported evidence. This is naturally the case as the two

indices are strongly positively correlated (correlation = 67%). I also include additional proxies for firm size (natural logarithm of annual net sales) and firm profitability (ROA; defined as earnings before interests and taxes divided by annual average total assets), in line with prior literature (e.g. Core, Guay, and Larcker, 2008; Faulkender and Yang, 2010). Year-fixed effects are included to control for year-specific market-wide events such as the global financial crisis that remained influential until 2008 and 2009, and the sample is two-way clustered by year and firm.

Table 4 reports the empirical results from model (1). As predicted, P-to-G has significantly positive association with executive non-equity incentive compensation in column (1) through column (3). The empirical evidence suggests that the major fraction of annual CEO bonus is determined by the level of performance with respect to performance goal. Furthermore, the coefficients of variables indicate that the impact of performance goal achievement on non-equity incentive compensation is prevalent over other coefficients of variables that have been suggested as key determinants of CEO pay. The coefficient of variable P-to-G is not only statistically significant. The coefficient of 2.153 in Column (1) is interpreted into the change of non-equity incentive compensation by 215% for a one unit increase in P-to-G, when all other variables in the model are held constant. In other words, when P-to-G increases by 1% point, the non-equity compensation increases by 2.15%. Given that mean non-equity compensation amounts to nearly $2,100,000 a year, the 1% point improvement in P-to-G leads to approximately $45,000 increase in non-equity compensation. I test the relationship between the three traditional determinants and the level of CEO annual bonus. The table shows consistent

results with prior literature, verifying the significantly positive association for each of three traditional determinants. Then, in column (5), the coefficients of main variables, P-to-G and (P-to-G)*(d_Meet_Goal), are significantly positive. The two competing determinants of executive compensation other than meeting analyst forecast earnings consensus indicator have, overall, no significant association with non-incentive compensation. Even the meeting analyst forecast variable has significantly lower coefficient than P-to-G or (P-to-G)*(d_Meet_Goal) and the coefficient in column (5) are significantly reduced from column (4), implying the dominant role of performance achievement in determining annual CEO bonus. The increase in R^2 from column (4) to column (5) and (6) is the evidence that much greater fraction of non-equity incentive compensation is explained by considering P-to-G.

[INSERT TABLE 4 ABOUT HERE]

To examine Hypothesis 2, I include nonlinearity measure of the relationship between performance goal achievement and compensation in Model (1), following the design of typical compensation contract.

$$COMP_{it} = \beta_0 + \beta_1 D\_Meet\_Goal_{it} + \beta_2 D\_Area1_{it} + \beta_3 D\_Area2_{it} + \beta_4 D\_Area4_{it}$$
$$+ \beta_5 D\_Meet\_Analyst_{it} + \beta_6 D\_Meet\_Zero_{it} + \beta_7 D\_Meet\_Prior_{it} + \beta_8 \log(Assets)_{it}$$
$$+ \beta_9 \log(Sales)_{it} + \beta_{10} BM_{it} + \beta_{11} ROA_{it} + \beta_{12} Adj\_Ret_{it} + \beta_{13} Ownership_{it} + \beta_{14} Age_{it}$$
$$+ \beta_{15} Tenure_{it} + \beta_{16} D\_Regulated_{it} + \beta_{17} G\_Index_{it} + \Sigma Year + \varepsilon_{it} \quad (2)$$

The first measure of nonlinearity, d_Meet_Goal, is included to examine whether there is change in managerial incentives surrounding the performance goal. Table 5 reports the findings. The positive coefficient of d_Meet_Goal indicates that

whether CEO meets her performance goal itself is an important factor to consider for compensation committee of BOD in granting CEO annual bonus. This finding provides a possible reason to explain the described typical 102% performance achievement level. That is, most executives have strong financial incentives in meeting the goal, and even slight overachievement can lead to large increase in the amount of year-end bonus. Without such threshold or "kink," CEO will have no incremental incentive to achieve performance goal under perfectly linear compensation contract. The model of non-equity incentive compensation scaled by total assets reports even stronger results as prior finding.

The second measure of nonlinearity is the four different areas along the compensation contract design. The typical compensation contract ex ante involves the four areas as described in Figure 1. I first examine whether large sample actual compensation contracts support the prior field study findings. Then, I investigate whether the nonlinear compensation contract works as intended. The findings are reported in Column (2) and (4) in Table 5 (unreported results for brevity are qualitatively similar when dependent variable is log of total compensation and total compensation divided by total assets). As designed, when CEO fails to meet the lower bound her non-equity compensation significantly decreases compared to when she meets her performance goal. If her P-to-G is in Area 2, her bonus is reduced but the economic significance is much smaller than when her P-go-G is in Area 1. When CEO beats the upper bound, his bonus significantly increases relative to simply meeting the performance goal. Collectively, the findings are in generally consistent with the prior

evidence. However, I find that inconsistent with the compensation contract design ex ante, there is either severe penalty for fairly bad performance or strong reward for fairly good performance. This evidence is consistent with recent study by Murphy and Jensen (2011) who argue that the typical nonlinear compensation contracts are detrimental to firm value by providing misleading incentives to manage earnings and to take on excessive (or insufficient) risk to CEOs.

[INSERT FIGURE 1 ABOUT HERE]

[INSERT TABLE 5 ABOUT HERE]

As a robustness test, I conduct common factor analysis for determinants of CEO pay in Table 6 following prior studies (e.g., Larcker, Richardson, and Tuna 2007). In Table 6, Panel A, I classify the variables in previous models in six factors. 67% of the total variance is explained by the six factors. In Panel B, I regress CEO pay on the six factors that consist of the original explanatory variables to address multicollinearity concern. The findings are qualitatively similar to the main findings.

[INSERT TABLE 6 ABOUT HERE]

Then I perform direct comparisons between the impacts of determinants in Table 7. In Table 7, Panel A1 and A2, I classify the sample into groups of CEOs who miss and meet analyst forecast EPS. The executives who miss analyst forecast but meet their own performance goal earn significantly greater non-incentive bonus than executives who do not meet performance goal. In contrast, executives who meet analyst forecast but miss own performance goal earn less than those who also achieve their performance goal. In Panel B1 and B2, I divide the sample into groups of CEOs who

miss and who meet previous year's EPS. CEOs who miss prior EPS but meet their own performance goal this year earn greater than those who miss their goal too. On the other hand, executives who increase EPS from the last year but miss this year's performance goal earn substantially less than those who meet their performance goal. In conclusion, achieving executive's own performance goal has significantly larger impacts on the magnitude of annual bonus than any other competing determinants of CEO compensation.

[INSERT TABLE 7 ABOUT HERE]

Overall, I find strong evidence that performance goal achievement, either the continuous ratio of actual to target performance or the fact that performance goal has been achieved, is a major determining factor of CEO annual non-equity incentive compensation. The magnitude of the effect outweighs any effects of other competing determinants. The findings support my hypotheses that executives have strong economic incentives to achieve their own performance goals. In other words, performance goals play an influential role in executive performance evaluation and compensation and will be used as pivotal tool by board of directors to effectively control managers' behaviors and decision-making in direction of shareholder and manager incentive alignment.

I then examine whether shareholders indeed benefit by having executive compensation contracts that base performance evaluation and compensation decision on performance goal achievement. I analyze the effect of p-to-g on the pay-performance sensitivity by employing the percent to percent change model of PPS (Murphy, 1985; Gibbons and Murphy, 1992; Edmans, Gabaix, and Landier, 2009):

$$\Delta\log(COMP_{it}) = \beta_0 + \beta_1\Delta\log(Firm\_Value)_{it} + \beta_2\,\Delta\log(Firm\_Value)_{it} *(P\text{-}to\text{-}G)$$
$$+ \beta_3\Delta\log(Firm\_Value)_{it}*(d\_Meet\_Goal) + \beta_4\Delta\log(Firm\_Value)_{it}*(D\_Zone)$$
$$+ \beta_5\Delta\log(Firm\_Value)_{it}*(D\_No\_P\text{-}to\text{-}G) + \Sigma YEAR + \varepsilon_{it} \quad (3)$$

My measure of the dependent variable is twofold. First, annual cash CEO compensation is the sum of cash salary and non-equity incentive bonus (Shaw and Zhang, 2010). Second, annual total CEO compensation is the sum of salary, non-equity incentive bonus, restricted stock grants, long-term incentive payouts, Black-Scholes grant value of stock options, and all other compensation (Himmelberg and Hubbard, 2000; Hall and Liebman, 1998). Following prior literature that directly estimates change in centered compensation, I use year-on-year change in the natural logarithm of the level of compensation (Hall and Liebman, 1998; Leone, Wu, and Zimmerman, 2006). The change in shareholder wealth is measured by the change in firm value (see Appendix B for definition). Edmans, Gabaix, and Landier (2009) compare the explanatory power and relevancy of various PPS measure from prior studies and argue that percentage-percentage change model is among the most desirable empirical measures of alignment of manager and shareholder interests. Finally, I control for year effects that may be significant because the sample period spans through financial crisis era (2008-2012).

Table 8 reports the results of model (3). I find statistically significant positive relationship between change in executive compensation and change in shareholder wealth, consistent with prior literature (e.g., Jensen and Murphy, 1990; Hall and Liebman, 1998). In column (2), I find results as predicted that achieving performance goal is positively related with pay-performance sensitivity. The result is not only

statistically significant but also economically meaningful. When P-to-G is taken into account, the PPS improves by approximately 0.5% point.[5] This indicates that by exerting effort to achieve performance goal, the CEO pay is more tightly associated with her performance and ultimately with shareholder wealth. The stronger alignment of interests will mitigate agency problem and leads to improvement of shareholder value. The similar results are reported in Column (3) and (4). Lastly in Column (5), I examine whether non-disclosure firm has lower pay-performance sensitivity by including the indicator variable that equals 1 if P-to-G information is undisclosed. The findings are as predicted. However, the caveat is that there are largely two reasons behind the undisclosed P-to-G: Firms either do not have performance-based compensation scheme or simply have not disclosed their proprietary information as the disclosure requirement is not mandatory. The confounding reasons weaken the implication of the finding to the extent that there are significantly large number of firms that do not disclose their compensation contracts for proprietary cost reason.

[INSERT TABLE 8 ABOUT HERE]

6. Summary and Conclusion

Performance goal has been regarded a pivotal element of CEO compensation contracts. Not many prior studies have documented implication of performance goal on CEO pay.

[5] In Column (1), the coefficient is interpreted as 1.26% increase in non-equity compensation per 1% increase in firm value. In Column (2), the coefficient on the interaction term indicates that when P-to-G is measured, the increase in non-equity compensation per 1% increase in firm value is 1.77%.

I provide empirical evidence that performance goal has strong impact on determining annual non-equity incentive compensation, using the relatively large and recent sample of the largest U.S. companies. The results indicate that executives consider performance goals seriously as achieving the goals is directly related with the amount of the annual bonuses. Therefore, performance goals work as effective organizational control mechanism to align manager's incentive with organizational goal and shareholder wealth. In addition, CEOs have nonlinear incentives in typical compensation contract, although the impact of typical nonlinear compensation contract designs tends to weaken in the empirical findings. Finally, I examine the hypothesis that performance goal improves CEO pay-performance sensitivity. I report strong evidence of improvement of pay-performance sensitivity by achieving performance goals.

Limitations of the study include relying on measured p-to-g that is confounded by discretionary changes in performance goal setting and compensation decision processes. Kim and Yang (2014) find some evidence that boards make such changes for the purpose of awarding CEOs some bonuses. This calls for the more detailed investigation of performance goal setting and performance evaluation, if current disclosure quality ultimately improves. Another limitation is to leave bigger part of CEO pay package, namely stocks and options, that is another important cause for managerial incentives and actions. P-to-G in my study only focuses on the decision-making around non-equity incentive compensation. The biggest obstacle to conduct more fruitful research on long-term compensation is the lack of disclosure on performance evaluation process. This also leads to the call for more discipline by boards in disclosing more

information to shareholders.

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Appendix A: An excerpt from CD&A section of proxy statement, McKesson Corporation, FY 2011

Management Incentive Plan ("MIP"): At its meeting in May 2010, during its annual review of compensation for executive officers, the Compensation Committee approved target awards (expressed as a percent of annual base salary), the performance measure and the award scale for the FY 2011 MIP. The threshold, target and maximum payouts for the FY 2011 MIP are displayed below in the 2011 Grants of Plan Based Awards Table, based on the Compensation Committee's approval in May 2010 of **an EPS target for FY 2011 of $4.82.**

At its meeting in May 2011, during its annual review of compensation for executive officers, the Compensation Committee assessed the Company's performance versus the MIP performance measures approved in May 2010. For FY 2011, **the Compensation Committee assessed the Company's EPS performance to be $5.00 per diluted share**, which excluded $0.14 per diluted share of US Oncology acquisition-related expenses. Consistent with its past practice, the Compensation Committee determined that an adjustment for acquisition-related expenses to the Company's FY 2011 EPS result of $4.86 per diluted share was appropriate to reflect certain unusual events that were not included in the Company's FY 2011 operating plan. **Since the Company's FY 2011 EPS performance of $5.00 per diluted share as assessed by the Compensation Committee exceeded the pre-established target goal noted above by $0.18, all corporate employee participants were eligible to receive 123% of their initial MIP target cash award**, in accordance with the following payout scale:

EPS for FY 2011	MIP (% of annual base salary)
$5.30 and above	200%
$5.11	150%
$4.82 (Performance goal)	100%
$4.43	50%
$4.42 and below	0%

Appendix B: Variable definitions

P-to-G = Actual performance divided by performance goal

D_Meet_Goal = 1 if P-to-G is greater than or equal to 1, and 0 otherwise

D_Area1 = 1 if P-to-G is less than minimum performance threshold, and 0 otherwise

D_Area2 = 1 if P-to-G is greater than or equal to minimum performance threshold and less than performance goal, and 0 otherwise

D_Area3 = 1 if P-to-G is greater than or equal to performance goal and less than maximum performance cap, and 0 otherwise

D_Area4 = 1 if P-to-G is greater than or equal to maximum performance cap, and 0 otherwise

D_Zone = 1 if P-to-G is greater than or equal to minimum performance threshold and less than maximum performance gap, and 0 otherwise

D_No_P-to-G = 1 if P-to-G is undisclosed, and 0 otherwise

D_Miss_Goal = 1 if P-to-G is less than 1, and 0 otherwise

D_Meet_Analyst = 1 if EPSt is greater than or equal to consensus analyst forecast EPS, and 0 otherwise

D_Meet_Zero = 1 if income before extraordinary items is greater than or equal to 0, and 0 otherwise

D_Meet_Prior = 1 if EPSt is greater than or equal to EPSt-1, and 0 otherwise

log(Non_Eq) = Natural logarithm of non-equity incentive compensation

Δlog(Non_Eq) = Change in natural logarithm of non-equity incentive compensation from t-1 to t

Non_Eq/Assets = Non-equity incentive compensation divided by total assets

log(Total_Comp) = Natural logarithm of total compensation

Δlog(Total_Comp) = Change in natural logarithm of total compensation from t-1 to t

Total_Comp/Assets = Total compensation divided by total assets

Δlog(Firm_Value) = Change in natural logarithm of market capitalization from t-1 to t

log(Assets) = Natural logarithm of total assets

BM = Ratio of book value to market value of equity

Adj_Ret = Market-adjusted rate of return of common stock

Ownership = Percentage of CEO total shares owned excluding options

Age = CEO's current age

D_Regulated = 1 if the firm is in gas, electricity, telecomm, or utility industry, and 0 otherwise

log(Sales) = Natural logarithm of annual net sales

ROA = Earnings before interests and taxes divided by annual average total assets

Tenure = Length of tenure as CEO

G-Index = Aggregate score of the level of shareholder rights protection by Gompers, Ishii, and Metrick (2003)

E-Index = Aggregate corporate governance quality indicator by Bebchuk, Cohen, and Ferrell (2009)

Figure 1: Descriptive structure of disclosed typical annual non-equity incentive plan

The horizontal axis measures the degree of P-to-G, and the vertical axis shows the degree of non-equity incentive compensation divided by target bonus, both of a typical annual executive compensation plan. The descriptive data suggest that, on average, the sample CEOs achieve 102% of their performance goal, and as a result, receive 120% of their annual base salary as annual non-equity incentive compensation.

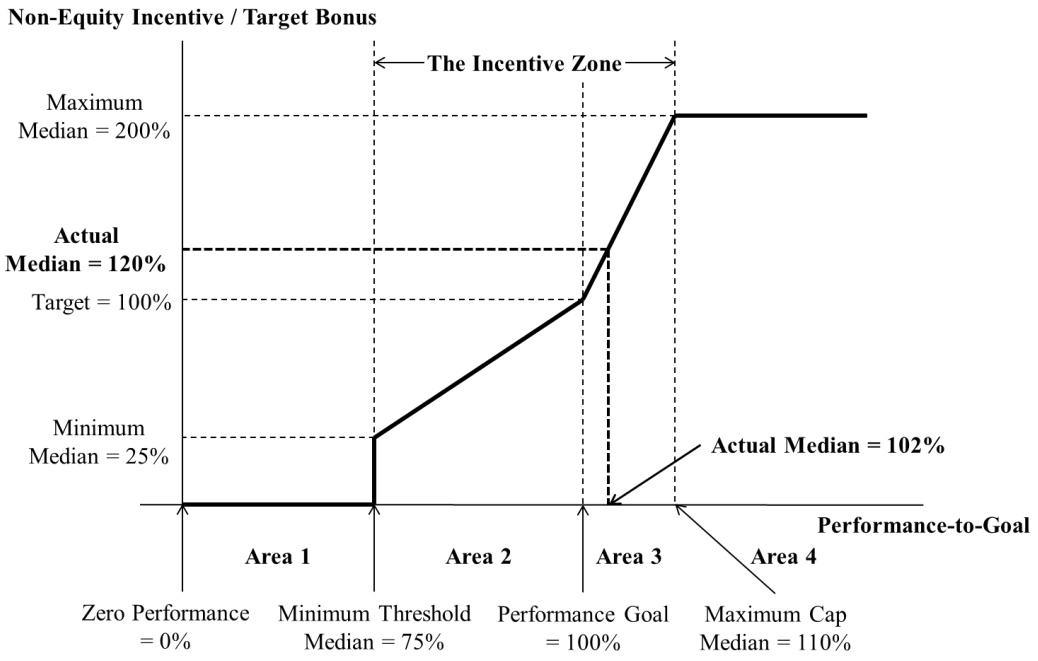

Figure 2: Sample distribution of performance goal achievement

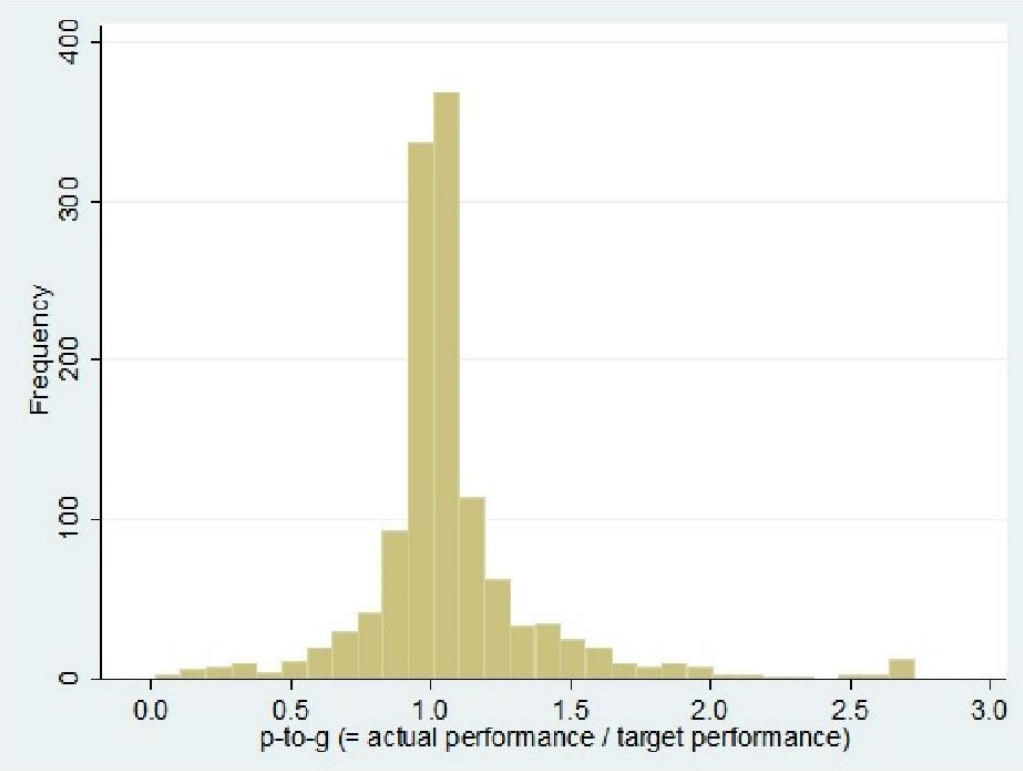

Table 1: Descriptive statistics of performance goals

Panel A: Use of performance metrics

	Mean	Median	Q1	Q3	Std	N
Number of performance metrics	2.47	2	2	3	1.13	1,292
Weight of performance metric 1	0.56	0.50	0.33	0.75	0.27	1,292
Weight of performance metric 2	0.34	0.33	0.25	0.45	0.14	857

Panel B: Performance measures

	Metric 1 (N=1,292)	Metric 2 (N=857)
EPS-related measure	0.40	0.06
Operating income-related measure	0.22	0.12
Net income-related measure	0.10	0.03
Revenue-related measure	0.07	0.35
EBITDA-related measure	0.04	0.01
Cash flow-related measure	0.01	0.20
Other measures	0.17	0.23
Total	1.00	1.00

Panel C: P-to-G by performance metric

	Mean	Median	Q1	Q3	Std Dev
Metric 1 (N=1,292)	1.06	1.02	0.96	1.11	0.35
Metric 2 (N=857)	1.07	1.01	0.96	1.11	0.54
Metric 3 (N=405)	1.04	1.03	0.96	1.15	0.96
Difference of p-to-g between Metric 1 and 2					-0.03 (t-statistic = -0.85)
Difference of p-to-g between Metric 2 and 3					0.02 (t-statistic = 0.37)
Difference of p-to-g between Metric 3 and 1					-0.01 (t-statistic = -0.14)

Panel D: P-to-G by threshold

	Mean	Median	Q1	Q3	Std Dev
d_Area1	0.09	0	0	0	0.29
d_Area2	0.27	0	0	1	0.44
d_Area3	0.42	0	0	1	0.49
d_Area4	0.22	0	0	0	0.42

Table 2: Descriptive statistics of sample data

Panel A: Classification of annual CEO compensation

	Mean	Median	Q1	Q3	Std Dev	N
Salary ($)	1,135,23	1,077,22	920,769	1,293,86	393,055	1,292
Non-equity incentive ($)	2,099,07	1,691,71	999,500	2,727,44	1,706,52	1,292
Total cash compensation	3,238,84	2,837,19	1,953,80	4,000,00	1,938,50	1,292
Total compensation ($)	10,508,6	8,709,62	6,214,08	12,676,1	7,167,85	1,292

Panel B: Firm characteristics

	Mean	Median	Q1	Q3	Std Dev	N
Sales ($ millions)	20,419	8,414	4,365	17,639	42,401	1,292
Total assets ($ millions)	26,731	12,004	6,038	28,487	54,711	1,292
Book-to-market ratio	0.46	0.41	0.26	0.61	0.28	1,292
Return on assets	0.11	0.10	0.07	0.15	0.06	1,292
Adjusted stock return	0.05	0.02	-0.12	0.19	0.26	1,292

Panel C: CEO characteristics, firm ownership, and corporate governance

	Mean	Median	Q1	Q3	Std Dev	N
Age (years)	56.03	56	52	60	5.82	1,292
Tenure (years)	5.73	5	2	8	4.70	1,292
Ownership (%)	0.70	0.10	0.04	0.23	2.52	1,094
G-Index	9.72	10	8	11	2.47	1,152
E-Index	2.48	3	1	3	1.31	1,128

Panel D: Meeting performance goals, analyst forecast earnings, zero-earnings target, and

	Mean	Median	Q1	Q3	Std Dev	N
d_Meet_Goal	0.63	1	0	1	0.48	1,292
d_Meet_Analyst	0.62	1	0	1	0.49	1,222
d_Meet_Zero	0.94	1	1	1	0.24	1,292
d_Meet_Prior	0.63	1	0	1	0.48	1,292

Table 3: Univariate Pearson correlation coefficients matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1) log(Non_Eq)	1.00																	
(2) log(Total_Comp)	**0.35**	1.00																
(3) P-to-G	**0.30**	**0.15**	1.00															
(4) d_Meet_Goal	**0.32**	**0.15**	**0.53**	1.00														
(5) d_Meet_Analyst	**0.25**	**0.10**	**0.28**	**0.44**	1.00													
(6) d_Meet_Zero	**0.10**	0.03	**0.23**	**0.16**	**0.10**	1.00												
(7) d_Meet_Prior	**0.16**	**0.08**	**0.25**	**0.29**	**0.29**	**0.20**	1.00											
(8) log(Assets)	**0.11**	**0.46**	0.04	**0.07**	-	-	-	1.00										
(9) log(Sales)	**0.09**	**0.45**	0.05	0.04	-	-	0.00	**0.81**	1.00									
(10) BM	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.30**	**0.12**	1.00								
(11) ROA	**0.08**	0.02	**0.18**	**0.14**	**0.13**	**0.29**	**0.22**	**-**	**-**	**-**	1.00							
(12) Adj_Return	**0.12**	0.02	**0.20**	**0.23**	**0.26**	**0.10**	**0.16**	**-**	**-**	**-**	**0.11**	1.00						
(13) Ownership	**-**	**-**	-	-	-	0.02	0.00	**-**	**-**	-	0.01	0.05	1.00					
(14) Age	0.01	0.05	0.02	0.02	-	0.00	-	**0.13**	**0.15**	**0.06**	0.02	-	**0.15**	1.00				
(15) Tenure	-	-	0.02	0.00	0.00	0.02	-	**-**	**-**	-	0.02	0.02	**0.36**	**0.35**	1.00			
(16) d_Regulated	-	**-**	-	**0.06**	-	0.03	**-**	**0.26**	-	**0.28**	**-**	-	-	0.04	-	1.00		
(17) G-Index	0.04	0.03	0.04	0.01	-	-	-	**-**	**-**	0.02	0.00	**0.06**	**-**	-	**-**	-	1.00	
(18) E-Index	0.03	**-**	0.03	-	-	-	-	**-**	**-**	**0.06**	-	**0.07**	-	-	-	0.02	**0.68**	1.00

Bold coefficients correspond to 5 percent significance level. See Appendix B for variable definition.

Table 4: Multivariate OLS regression model results for determinants of CEO pay

$$COMP_{it} = \beta_0 + \beta_1 P\text{-to-}G_{it} + \beta_2 D\_Meet\_Analyst_{it} + \beta_3 D\_Meet\_Zero_{it} + \beta_4 D\_Meet\_Prior_{it} + \beta_5 \log(Assets)_{it} + \beta_6 \log(Sales)_{it} + \beta_7 BM_{it} + \beta_8 ROA_{it} + \beta_9 Adj\_Ret_{it} + \beta_{10} Ownership_{it} + \beta_{11} Age_{it} + \beta_{12} Tenure_{it} + \beta_{13} D\_Regulated_{it} + \beta_{14} G\_Index_{it} + \Sigma Year + \varepsilon_{it} \quad (1)$$

	(1) log(Non_Eq)		(2) Non_Eq/Assets		(3) log(Total_Comp)		(4) Total_Comp/Assets	
P-to-G	2.153***	(5.56)	132.047***	(5.29)	0.153***	(3.23)	0.066	(0.75)
d_Meet_Analyst	1.019***	(4.18)	47.589***	(2.82)	0.077**	(2.00)	0.133*	(1.89)
d_Meet_Zero	0.239	(0.36)	-77.589***	(-2.85)	-0.014	(-0.17)	-0.167	(-1.41)
d_Meet_Prior	0.295	(1.20)	4.408	(0.26)	0.051	(1.40)	-0.022	(-0.31)
log(assets)	0.397*	(1.77)			0.288***	(8.44)		
log(sales)	0.016	(0.08)	-76.311***	(-11.01)	0.053*	(1.73)	-0.372***	(-15.55)
BM	-0.678	(-1.06)	10.829	(0.30)	-0.330***	(-4.13)	-0.174	(-1.62)
ROA	-0.418	(-0.20)	14.563***	(5.07)	0.358	(0.77)	0.048***	(5.32)
Adj_Ret	0.360	(0.79)	80.285**	(2.35)	-0.029	(-0.38)	0.117	(1.11)
Ownership	-0.360***	(-3.49)	-3.588	(-0.77)	-0.077***	(-3.25)	-0.025**	(-2.30)
Age	0.017	(0.74)	1.079	(0.88)	0.001	(0.41)	-0.004	(-0.68)
Tenure	0.008	(0.24)	9.462***	(2.58)	0.010	(1.64)	0.034***	(2.73)
d_Regulated	-0.135	(-0.41)	-63.055***	(-3.98)	-0.361***	(-6.96)	-0.448***	(-7.50)
G-Index	0.051	(1.11)	-3.152	(-1.20)	0.021***	(3.44)	0.011	(0.99)
Intercept	-0.017	(-0.01)	1622.880	(9.80)	7.700	(17.15)	9.066	(14.62)
No. of observations	944		944		944		944	
Adjusted R^2	0.19		0.33		0.41		0.36	

Year-fixed effects are included. t-statistics are heteroskedasticity-consistent and reported in parentheses. *, **, and *** correspond to 10 percent, 5 percent, and 1 percent significance levels, respectively, for two-tailed tests. See Appendix B for variable definition.

Table 5: Nonlinearity model results for determinants of CEO pay

$$COMP_{it} = \beta_0 + \beta_1 D\_Meet\_Goal_{it} + \beta_2 D\_Area1_{it} + \beta_3 D\_Area2_{it} + \beta_4 D\_Area4_{it} + \beta_5 D\_Meet\_Analyst_{it} + \beta_6 D\_Meet\_Zero_{it} + \beta_7 D\_Meet\_Prior_{it} + \beta_8 \log(Assets)_{it} + \beta_9 \log(Sales)_{it} + \beta_{10} BM_{it} + \beta_{11} ROA_{it} + \beta_{12} Adj\_Ret_{it} + \beta_{13} Ownership_{it} + \beta_{14} Age_{it} + \beta_{15} Tenure_{it} + \beta_{16} D\_Regulated_{it} + \beta_{17} G\_Index_{it} + \Sigma Year + \varepsilon_{it} \quad (2)$$

	log(Non_Eq)		Non_Eq/Assets	
	(1)	(2)	(3)	(4)
d_Meet_Goal	1.747***		91.699***	
	(6.61)		(5.61)	
d_Area1		-6.255***		-118.746***
		(-6.32)		(-4.59)
d_Area2		-0.586**		-55.183***
		(-1.97)		(-3.48)
d_Area4		0.610***		92.107***
		(3.53)		(3.71)
d_Meet_Analyst	0.703***	0.272	33.199**	31.750**
	(2.82)	(0.92)	(2.13)	(2.03)
d_Meet_Zero	0.591	-0.697	-55.121**	-45.757
	(0.90)	(-0.83)	(-2.09)	(-1.47)
d_Meet_Prior	0.292	-0.008	5.799	9.170
	(1.19)	(-0.03)	(0.35)	(0.66)
log(assets)	0.339	0.051		
	(1.51)	(0.18)		
log(sales)	0.040	0.227	-76.951***	-65.973***
	(0.21)	(1.04)	(-10.95)	(-8.34)
BM	-0.458	0.104	23.487	3.733
	(-0.72)	(0.15)	(0.65)	(0.13)
ROA	-0.335	0.036	14.797***	11.823***
	(-0.16)	(0.01)	(5.15)	(5.76)
Adj_Ret	0.322	0.999*	81.691**	62.666**
	(0.72)	(1.90)	(2.36)	(2.09)
Ownership	-0.357***	-0.241**	-3.379	1.186
	(-3.60)	(-2.10)	(-0.73)	(0.22)
Age	0.020	0.054**	1.173	2.934**
	(0.84)	(2.15)	(0.94)	(2.13)
Tenure	0.006	-0.012	9.445**	2.265
	(0.18)	(-0.35)	(2.57)	(1.27)
d_Regulated	-0.422	-0.028	-80.148***	-81.201***
	(-1.28)	(-0.07)	(-4.56)	(-4.94)
G-Index	0.060	0.000	-2.440	-0.062
	(1.34)	(0.00)	(-0.95)	(-0.02)
Intercept	1.523	5.496	1687.2	1446.649
	(0.54)	(1.50)	(10.02)	(7.29)
No. of observations	944	559	944	559
Adjusted R^2	0.19	0.34	0.33	0.40

Year-fixed effects are included. t-statistics are heteroskedasticity-consistent and reported in parentheses. *, **, and *** correspond to 10 percent, 5 percent, and 1 percent significance levels, respectively, for two-tailed tests. See Appendix B for variable definition.

Table 6: Common factor analysis results for determinants of CEO pay

Panel A: Measurement model

Factor	Component	Factor	Component
performance goal achievement		economic factor	
P-to-G	0.773	log(Assets)	0.865
d_Meet_Goal	0.910	log(Sales)	0.665
d_Area1	-0.435	BM	0.696
d_Area2	-0.702	ROA	-0.662
d_Area4	0.677	Adj-Ret	-0.317
other goal achievement		CEO factor	
d_Meet_Analyst	0.738	Ownership	0.630
d_Meet_Zero	0.490	Age	0.712
d_Meet_Prior	0.779	Tenure	0.807
industry factor		governance factor	
d_Regulated	1.000	G-Index	0.906

Panel B: Structural model

	log(Non_Eq)		log(Total_Comp)	
perf_goal_ach	1.142***	(6.77)	0.096***	(3.40)
other_goal_ach	0.401**	(2.46)	0.085***	(2.97)
econ_factor	0.310*	(1.71)	0.237***	(7.16)
ceo_factor	-0.099	(-0.49)	-0.063	(-1.23)
industry_factor	-0.025	(-0.18)	-0.146***	(-6.24)
gov_factor	0.079	(0.55)	0.043**	(2.01)
intercept	13.858	(55.64)	16.012	(294.44)
Number of observations	559		559	
Adjusted R^2	0.16		0.18	
Variance Inflation Factor	1.26			

Year-fixed effects are included. t-statistics are heteroskedasticity-consistent and reported in parentheses. *, **, and *** correspond to 10 percent, 5 percent, and 1 percent significance levels, respectively, for two-tailed tests. See Appendix B for variable definition.

Table 7: Comparison between effects of competing determinants on non-equity incentive compensation using subsamples of meeting analyst forecast and prior earnings

Panel A1

Subsample: Miss analyst forecast	Dependent variable:	log(Non_Eq)		log(Total_Comp)	
	N	Mean	Std Dev	Mean	Std Dev
d_Meet_Goal	168	14.06	2.54	15.99	0.65
d_Miss_Goal	295	11.30	5.41	15.83	0.73
Difference		2.75	4.58	0.16	0.70
t-statistic		7.42***		2.49**	
F-statistic		4.52		1.26	

Panel A2

Subsample: Meet analyst forecast	Dependent variable	log(Non_Eq)		log(Total_Comp)	
	N	Mean	Std Dev	Mean	Std Dev
d_Meet_Goal	604	14.43	1.77	16.06	0.60
d_Miss_Goal	155	12.98	3.81	15.88	0.65
Difference		1.45	2.34	0.18	0.61
t-statistic		4.62***		3.11***	
F-statistic		4.60		1.16	

Panel B1

Subsample: Miss prior earnings	Dependent variable	log(Non_Eq)		log(Total_Comp)	
	N	Mean	Std Dev	Mean	Std Dev
d_Meet_Goal	219	14.12	2.44	15.99	0.65
d_Miss_Goal	264	11.48	5.33	15.83	0.71
Difference		2.64	4.27	0.15	0.68
t-statistic		7.20***		2.49**	
F-statistic		4.76		1.16	

Panel B2

Subsample: Meet prior earnings	Dependent variable	log(Non_Eq)		log(Total_Comp)	
	N	Mean	Std Dev	Mean	Std Dev
d_Meet_Goal	597	14.39	1.98	16.07	0.61
d_Miss_Goal	212	12.39	4.49	15.85	0.71
Difference		2.01	2.86	0.22	0.64
t-statistic		6.30***		4.05***	
F-statistic		5.15		1.38	

The final full sample is divided into each subsample by the following criteria: (Panel A1 and A2) "Miss analyst forecast," if actual EPS_t < analyst forecast consensus EPS_t, or "Meet analyst forecast," if actual $EPS_t \geq$ analyst forecast consensus EPS_t (Panel B1 and B2) "Miss prior earnings," if $EPS_t < EPS_{t-1}$, or "Meet prior earnings," if $EPS_t \geq EPS_{t-1.}$ t-statistics are Satterthwaite variance estimator, assuming unequal variances of two compared groups. *, **, and *** correspond to 10 percent, 5 percent, and 1 percent significance levels, respectively. F-values are folded F-statistics and ratios of sample variances. See Appendix B for variable definition.

Table 8: Estimates of pay-performance sensitivity

$\Delta\log(COMP_{it}) = \beta_0 + \beta_1\Delta\log(Firm\_Value)_{it} + \beta_2\,\Delta\log(Firm\_Value)_{it}$ *(P-to-G) + $\beta_3\Delta\log(Firm\_Value)_{it}$*(d_Meet_Goal) + $\beta_4\Delta\log(Firm\_Value)_{it}$*(D_Zone) + $\beta_5\Delta\log(Firm\_Value)_{it}$*(D_No_P-to-G) + ΣYEAR + ε_{it} (3)

	Δlog(Non_Eq)					Δlog(Total_Comp)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Δlog(Firm_Value)	1.260***	0.595	1.014	2.062***	2.352***	0.139**	0.264*	0.240*	0.346**	0.252***
	(4.12)	(0.69)	(1.30)	(2.90)	(5.35)	(2.43)	(1.70)	(1.85)	(2.30)	(2.83)
Δlog(Firm_Value)*(P-to-G)		1.769***					-0.011			
		(2.74)					(-0.09)			
Δlog(Firm_Value)*(D_Meet_Goal)			2.136**					0.016		
			(2.50)					(0.11)		
Δlog(Firm_Value)*(D_Zone)				1.777*					-0.209	
				(1.89)					(-1.09)	
Δlog(Firm_Value)*(D_No_P-to-G)					-					-0.163*
					(-3.45)					(-1.65)
Intercept	0.065	-0.368	-0.352	-0.735	-0.046	0.024	0.032	0.031	0.068	0.017
	(0.26)	(-1.31)	(-1.46)	(-2.00)	(-0.18)	(0.48)	(0.60)	(0.59)	(0.84)	(0.33)
No. of observations	1,469	1,078	1,078	643	1,469	2,318	1,291	1,291	753	2,318
Adjusted R^2	0.04	0.06	0.06	0.07	0.04	0.01	0.01	0.01	0.01	0.01

Year-fixed effects are included. t-statistics are reported in parentheses. *, **, and *** correspond to 10 percent, 5 percent, and 1 percent significance levels, respectively, for two-tailed tests. See Appendix B for variable definition.

국문초록

최고경영자 성과보상계약 중 성과평가의 기준이 되는 성과목표는 최고경영자의 경제적 동기를 조직의 그것과 일치 시킴으로써 경영자의 경영 노력을 조직의 목적에 부합하는 방향으로 이끌어내는 역할, 즉 대리인비용 발생을 억제하는 역할을 한다. 본 연구는 이와 같은 선행 이론연구 결과를 실증하고, 나아가 실제 최고경영자 성과보상계약에서 성과평가와 보상이 어떻게 이루어지는지 분석한다. 첫째, 최고경영자의 성과보상은 애널리스트 주당순이익 예상치, 상대적인 과거 이익수준, 절대적인 흑자를 각각 달성하는 것보다 이사회가 부여한 성과보상계약 상의 성과목표를 달성하는 것에 더 강하게 연관되어 있다. 그 연관된 정도는 선행연구에서 밝힌 최고경영자 성과보상의 주요 결정요소들인 기업 규모, 기업 성과, 산업군, 최고경영자 특성, 기업지배구조 등을 통제하고도 통계적, 경제적으로 유의하다. 둘째, 성과목표 달성 수준과 성과보상 간에 비선형관계를 발견하였다. 최고경영자의 성과보상은 최고경영자가 성과목표를 달성하는지 여부와 성과목표 달성수준이 보상계약 상 어떤 사분선에 위치하는지에 비선형적으로 연관되어 있다. 따라서 최고경영자는 성과보상계약에서 명시한 성과목표 수준과 구체적인 계약 내용 및 형식에 따라 각기 다른 경제적 동기를 갖는다. 이는 실적과 성과보상 간 선형관계를 가정한 다수의

선행연구에 반하는 실증결과이다. 셋째, 최고경영자 성과보상과 주주 이익 간 관계의 밀접함("Pay-Performance Sensitivity")은 최고경영자가 성과목표를 달성할 때, 성과목표 달성도가 높을 때 그리고 성과보상계약이 정한 구체적인 경제적 유인 구간("Incentive Zone") 내에 있을 때 더 높다. 본 연구는 미국 S&P 500대 기업의 최고경영자들이 어떻게 평가되고 보상받는지의 실체에 접근한다는 점에서 의미가 있다. 결론적으로, 성과보상계약 내 성과목표는 기업 이사회가 최고경영자를 통제하는 데 유용한 도구가 되며 궁극적으로 주주 이익을 증진하는 데 쓰이고 있음을 밝힌다.

주요어: 성과목표; 최고경영자 성과보상; 성과보상과 주주 이익 간 민감도.

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